

Public Health Emergency Surveillance System (PHESS)

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Overview

- Syndromic surveillance
- Public Health Emergency Surveillance System
- Daily operations
- ESSENCE
- Sample events
- Lessons learned
- The way forward

Syndromic Surveillance

- Ongoing collection and assessment of health-related data that:
 - Precede diagnosis and lab results
 - Identify sufficient probability that a case or an outbreak may warrant a public health response

What is the Indiana PHESS?

- Statewide infrastructure for electronic transfer and analysis of data from hospitals and other patient care institutions for the early detection of:
 - Acts of bioterrorism
 - Disease outbreaks and other public health emergencies
 - Situational awareness

PHESS Data Sources

■ Hospital Emergency Departments

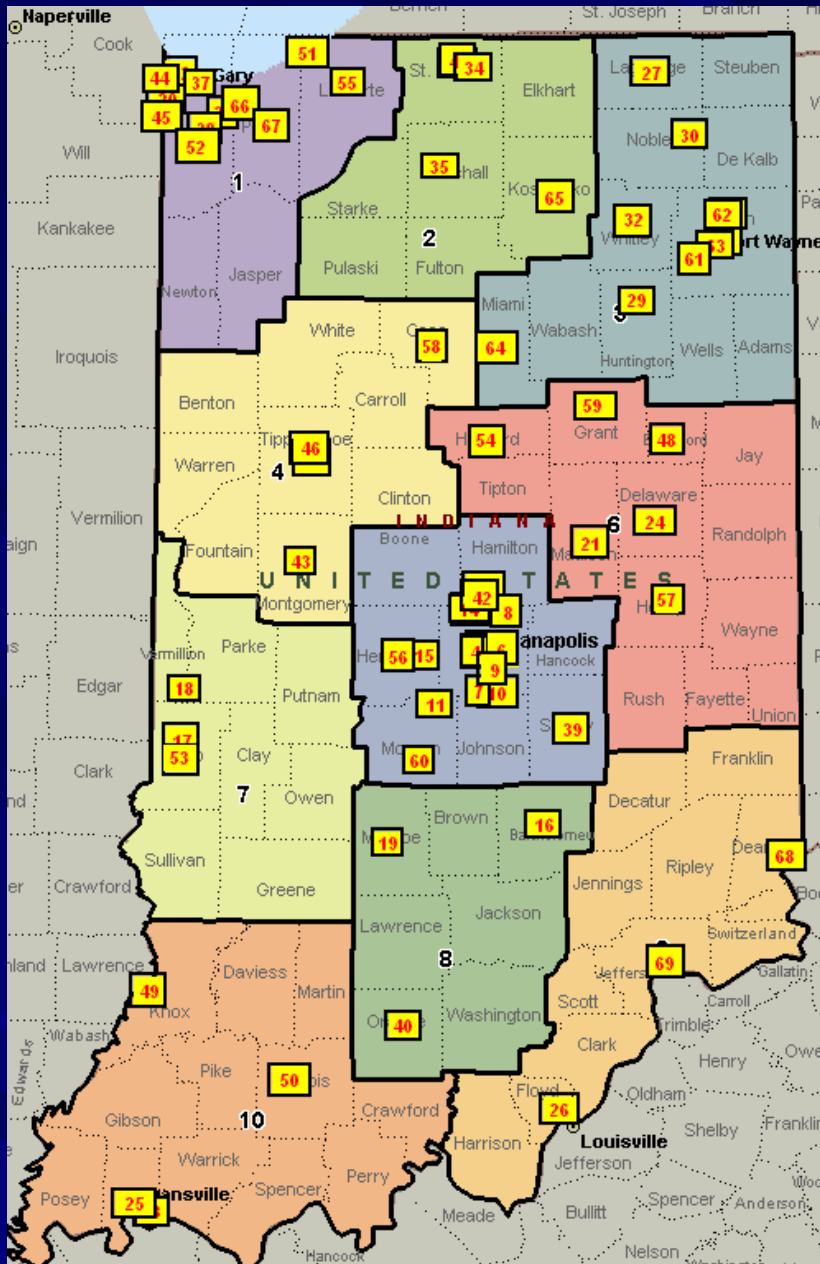
- Based on patient chief complaint
- No interruption to emergency department work flow
- Transmitted in real-time to Regenstrief Institute
- Supported by state statute

■ School Absenteeism

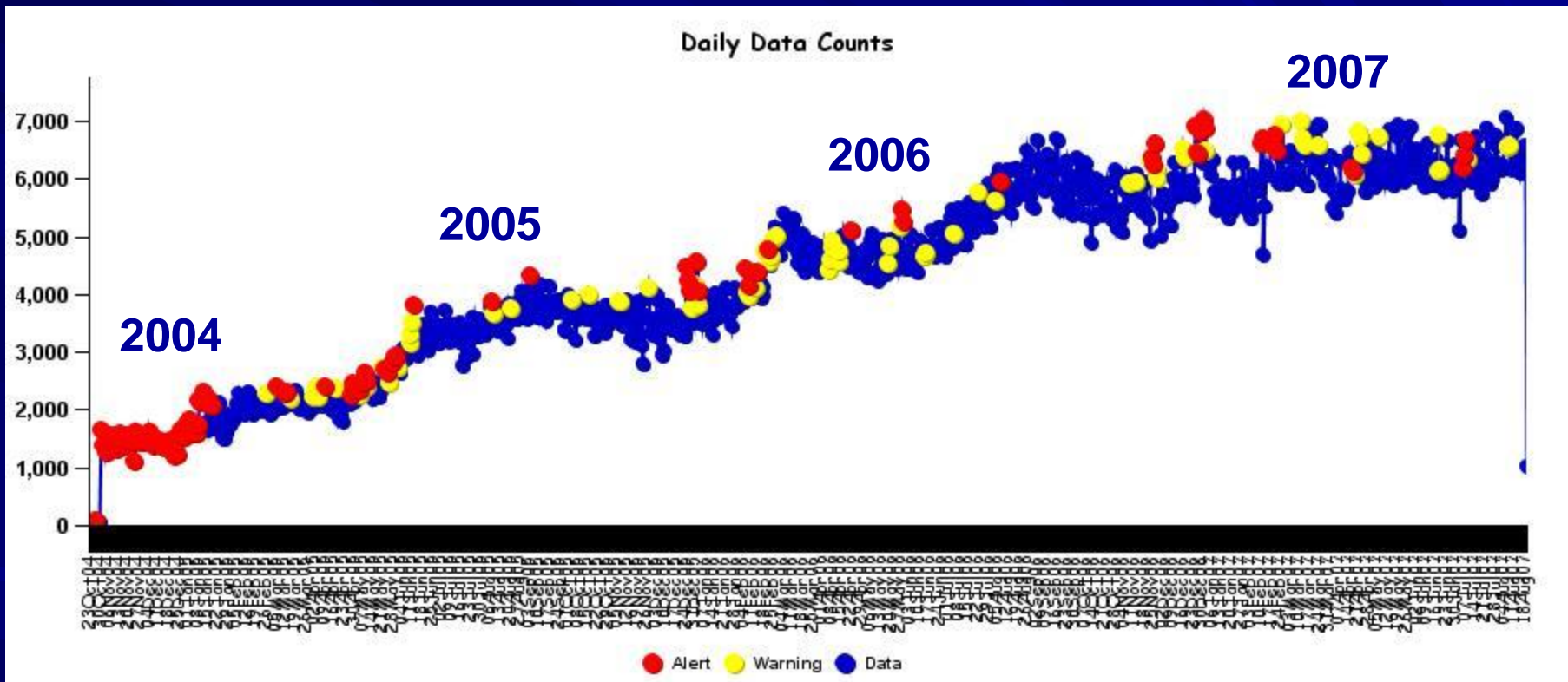
- Schools report via telephone to LHD when absenteeism is greater than 20%
- In accordance with Department of Education policy

Current PHESS Hospitals (n = 73)

Targeting 76 connections
by Aug 2008



Syndromic visits per day



Syndromic Data Pathway



Patient has abdominal pain



Patient chief complaint in ED, then securely transmitted in real-time to Regenstrief Institute



Data received in real-time from ED, then batched/sent securely to ISDH every 3 hours

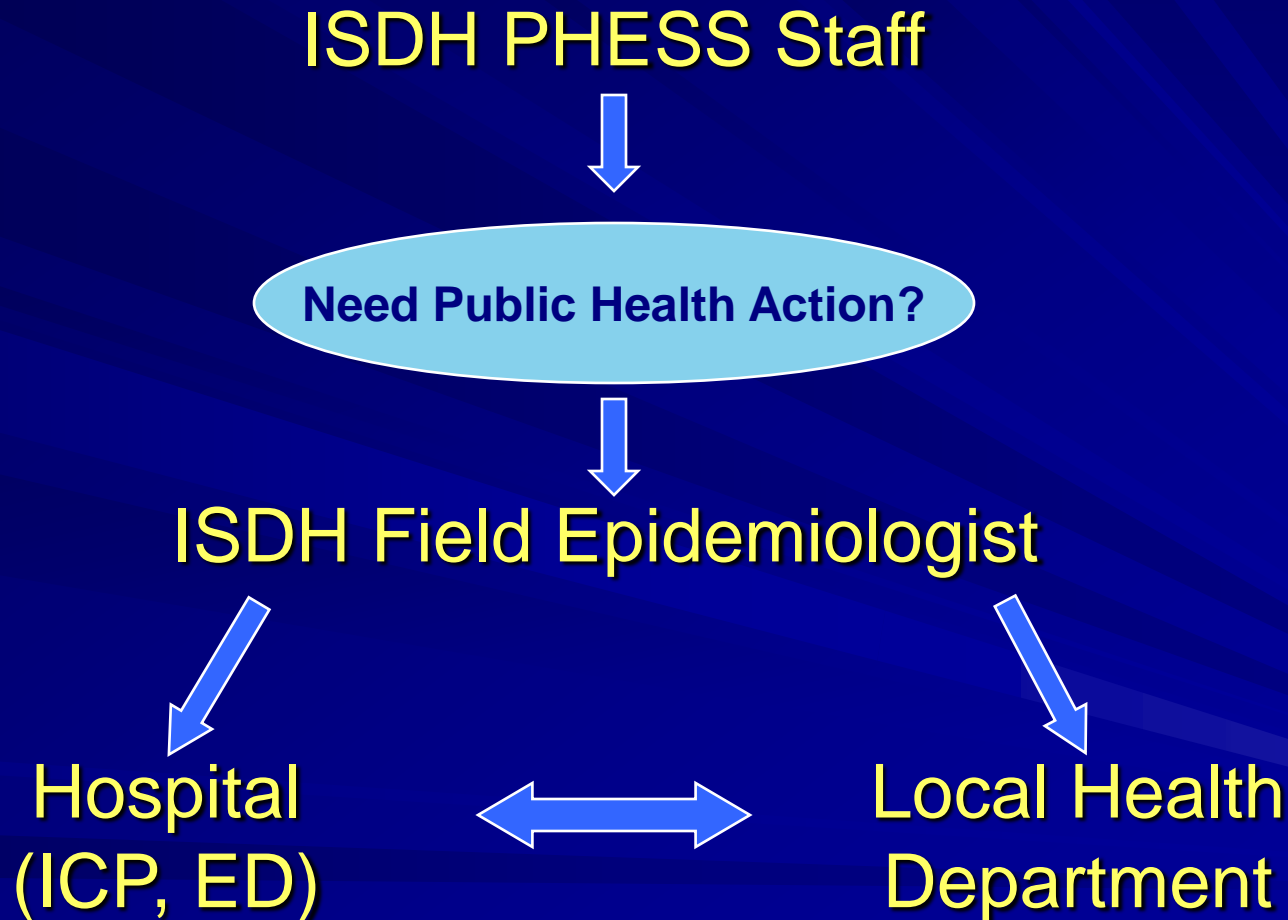


Data received every 3 hours and analyzed every day

Daily PHESS Operations – Data

- Data flow monitored 24x7 by Regenstrief Institute and the ISDH
- ESSENCE alerts and automated query results monitored by ISDH at regular intervals 7 days/wk
- Alert follow-up initiated by the ISDH for all counties except Marion – MCHD conducts its syndromic alert analysis and follow-up

ISDH Alert Investigation Process



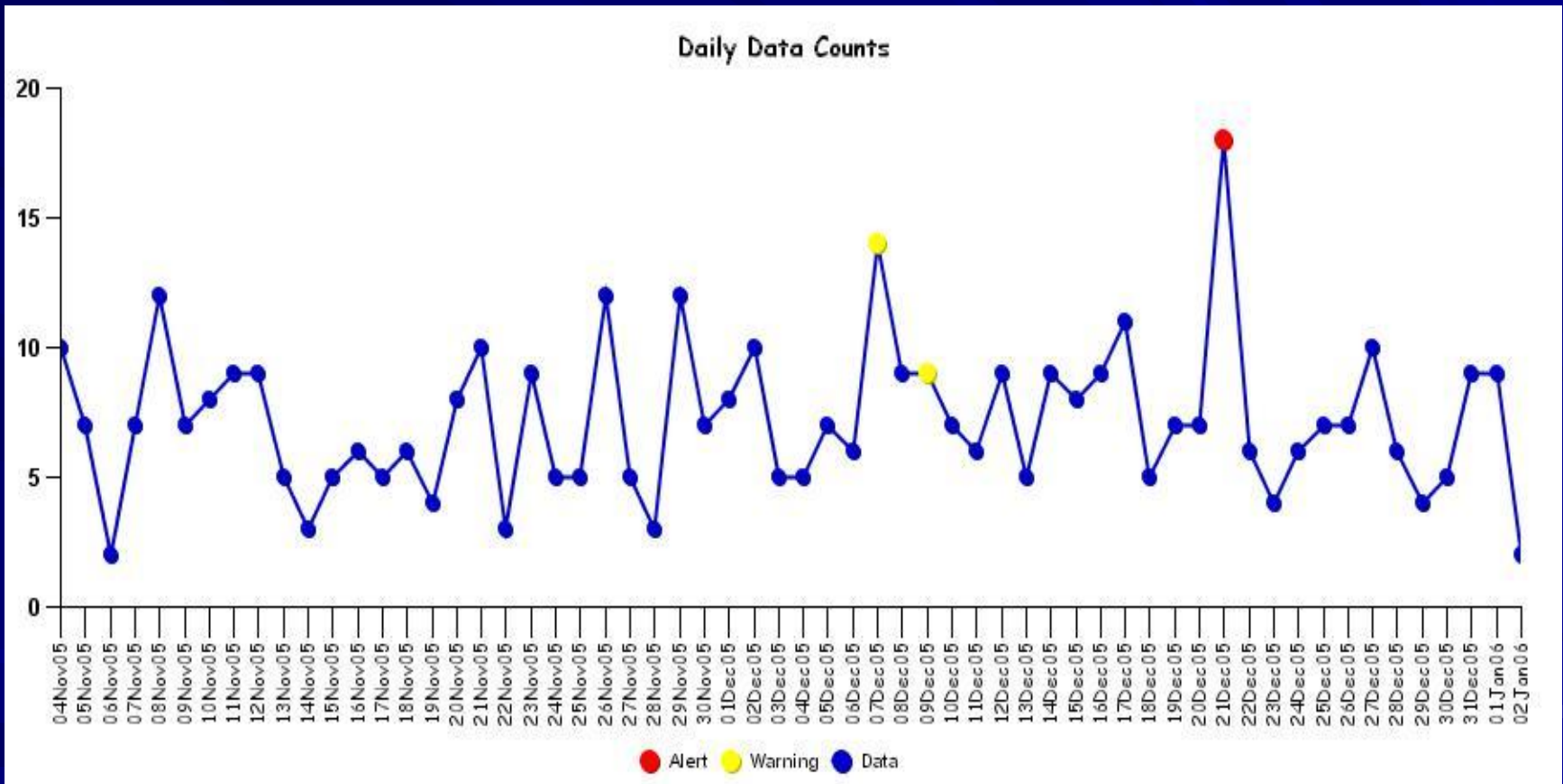
Syndromes for Emergency Department Chief Complaint Data

- Respiratory
- Gastrointestinal
- Fever
- Neurological
- Rash
- Botulism-like
- Hemorrhagic illness
- Shock / Coma
- *Other*

Sample Events

- Carbon monoxide exposure
- Foodborne outbreak
- Tornado injuries
- Super Bowl Syndromic Surveillance
- Detection of bioterrorism exercise
- Influenza-like illness tracking

Alert Time Series

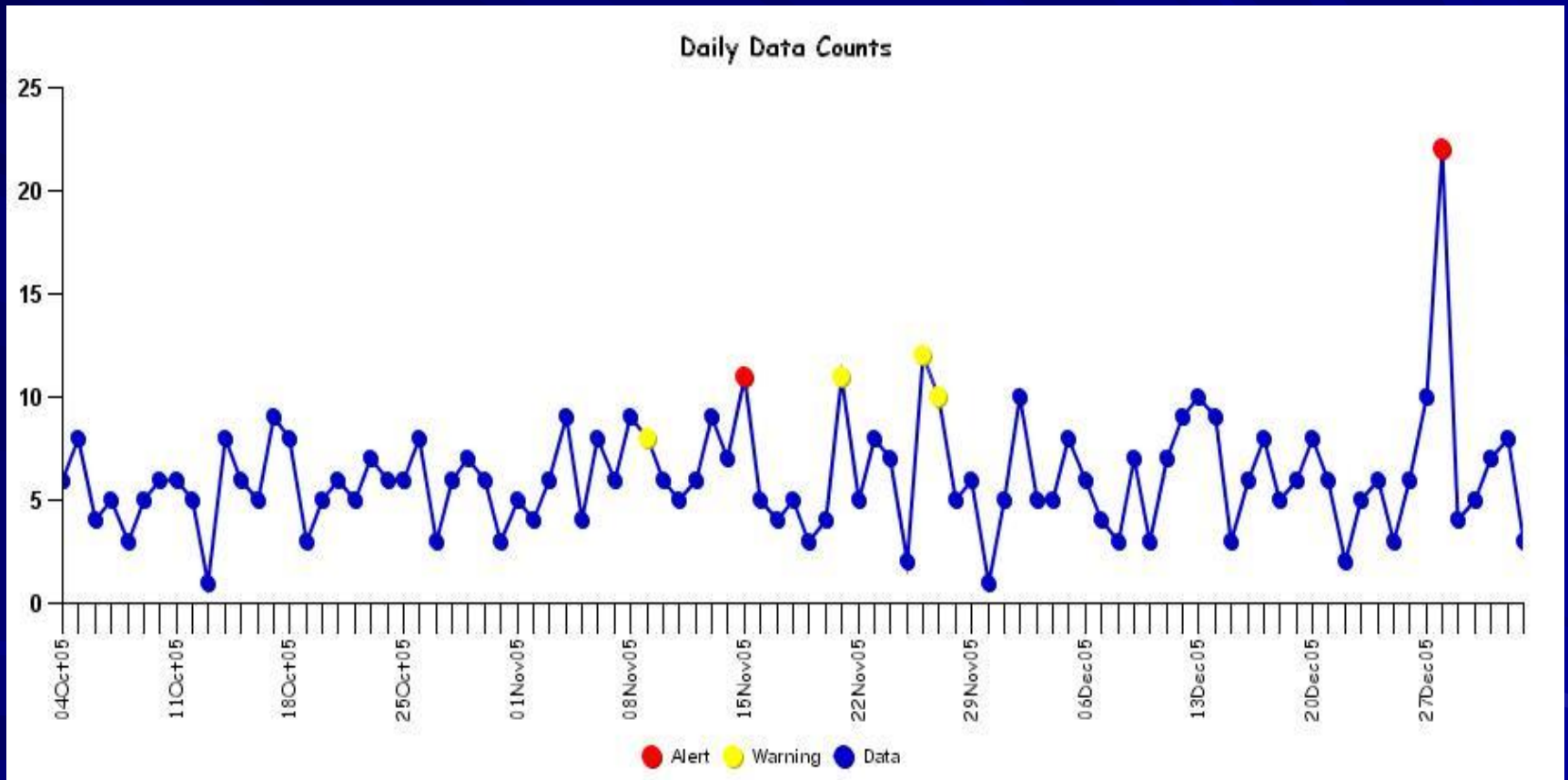


Action Steps

- Local health department and hospital notified
- Investigation revealed the family used alternative heating source inside the home
- Resolution: The neurological symptoms were the result of carbon monoxide poisoning

Alert Time Series

(Gastrointestinal Syndrome)



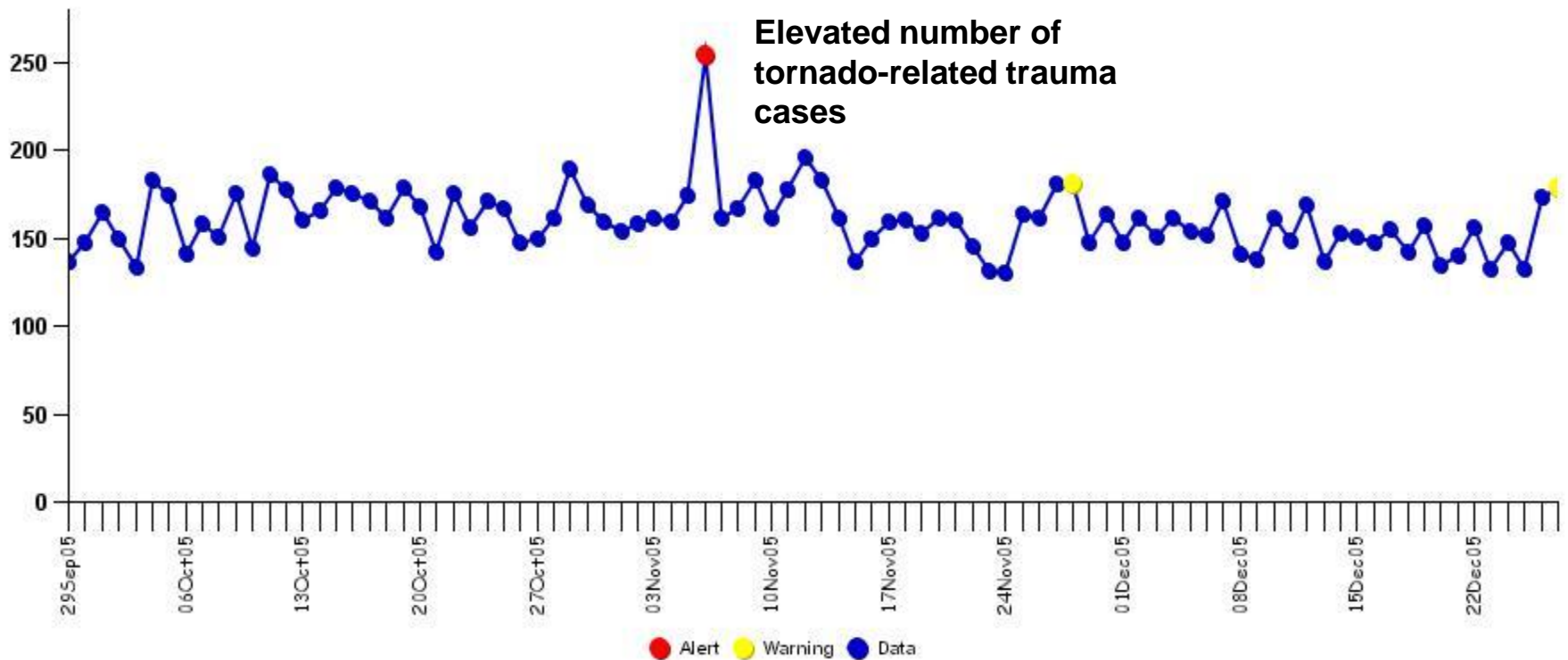
Action Steps

- A family ate same food from a small grocery store
- Health inspection found several food handling problems likely to cause food contamination at the store
- Resolution: Food handling training with grocery store

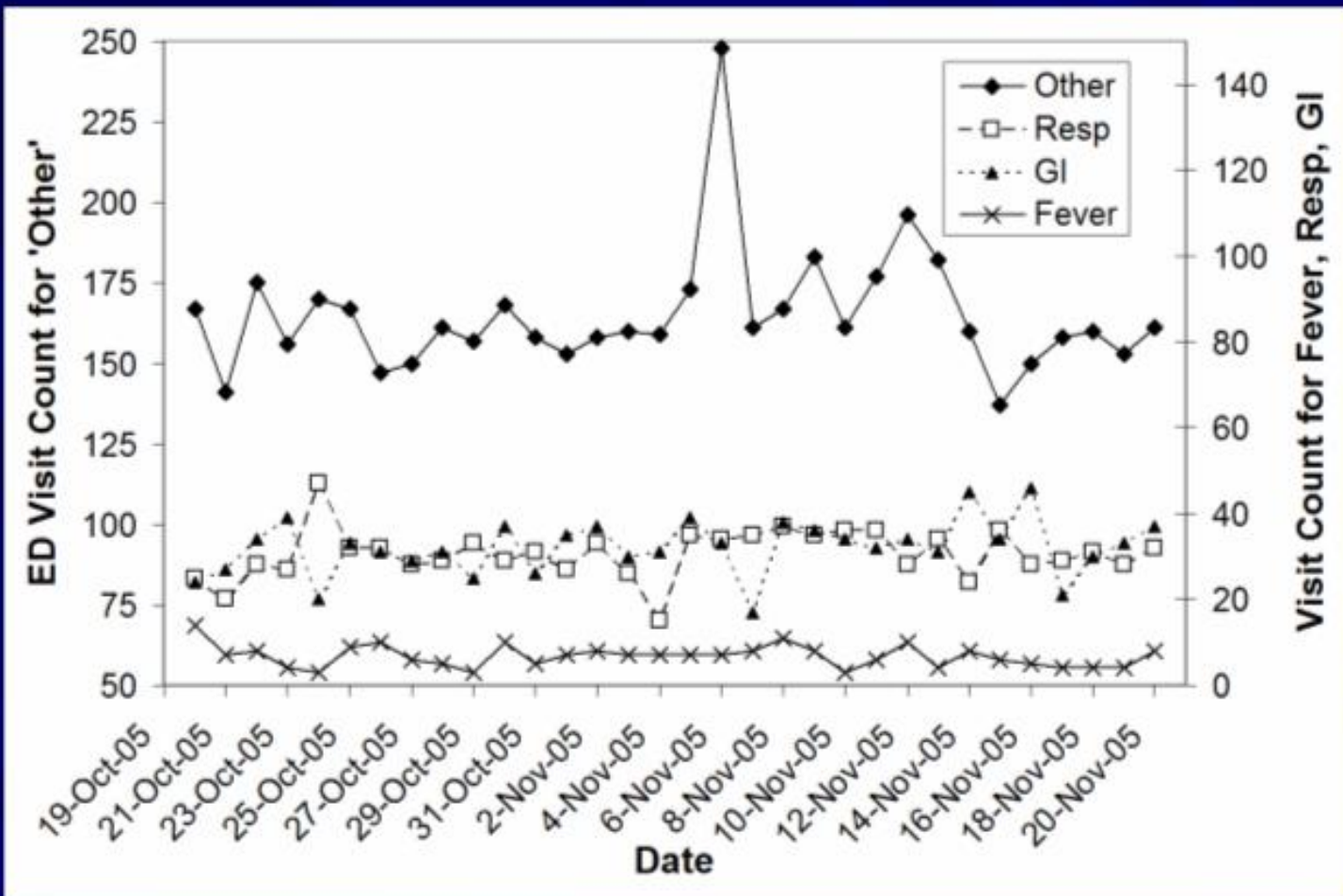
Alert Time Series

(Tornado, All Syndromes)

Daily Data Counts for Other Syndrome



System Discrimination



2007 Super Bowl Surveillance

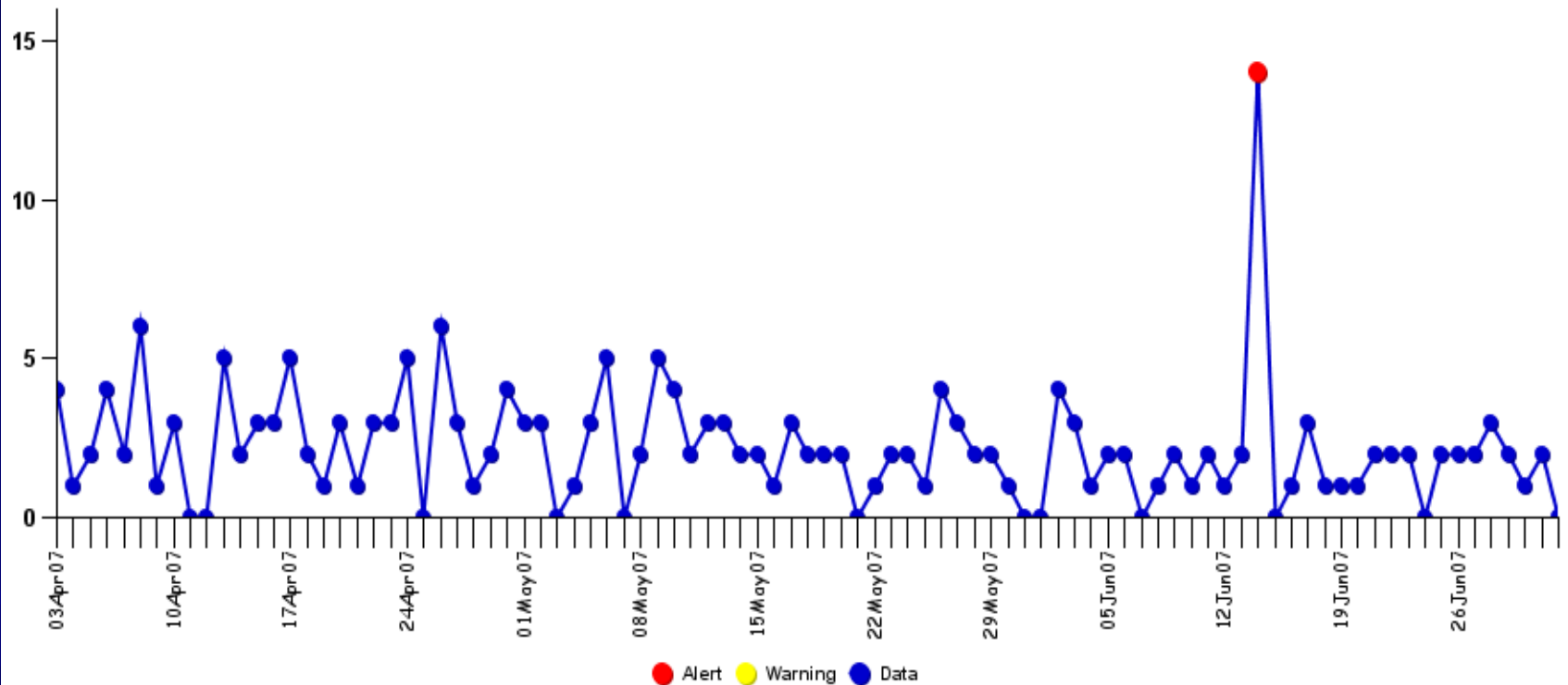
Collaborators:

- Cook County Health Dept (IL)
- Marion County Health Dept (IN)
- Indiana State Dept of Health
- Miami-Dade Health Dept (FL)
- Johns Hopkins University Applied Physics Laboratory (MD)

Alert Time Series

(Respiratory Syndrome)

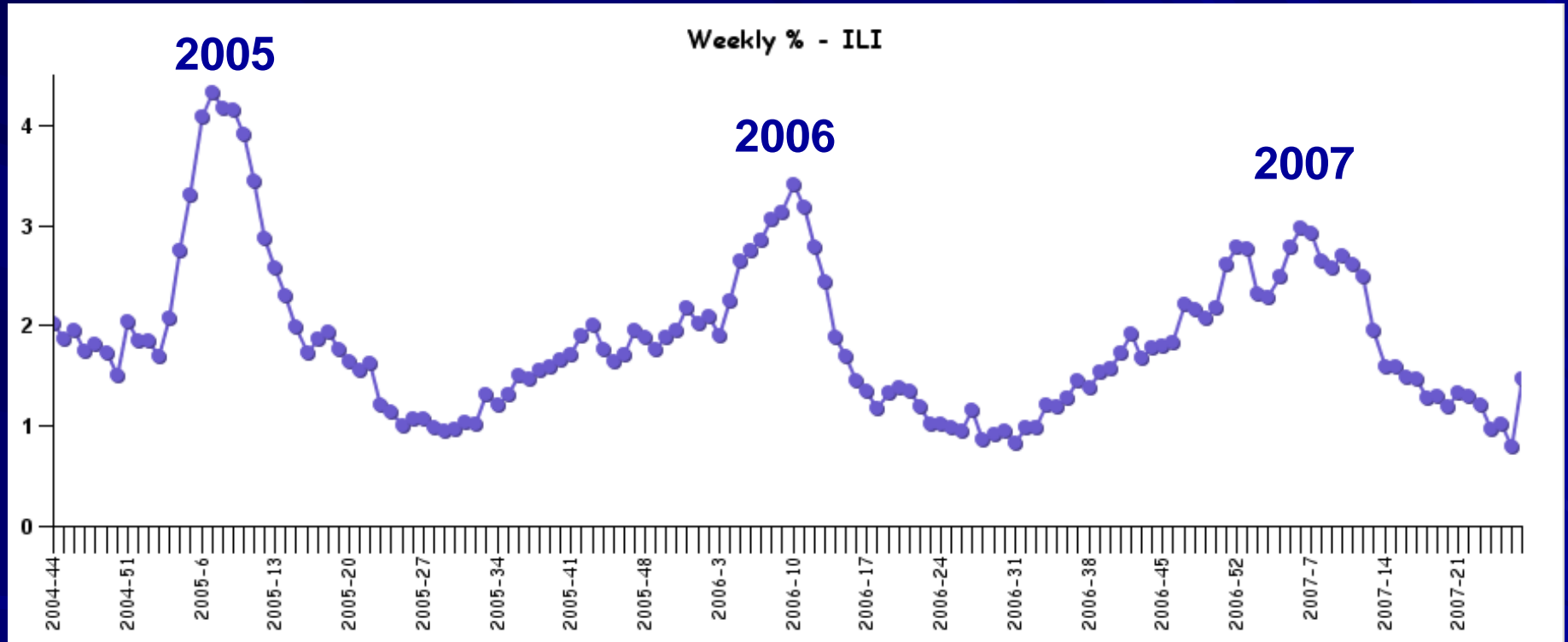
Daily Data Counts



Action Steps

- Odd spike:
 - “interesting” chief complaints
 - flu-like symptoms
 - 3 hr presentation window
 - sought care at ED outside of home zip
- Followed up with LHD and ED
- Resolution: Patients part of bioterrorism exercise

% Influenza-like Illness Tracking



Lessons Learned

- One-spike clusters can be significant
- You must be familiar with the data
- Time stamp can be essential for analysis
- System can perform well amidst elevated background noise
- There is no substitute for human interpretation and local knowledge

The Way Forward

- Data sharing with border states
- Targeted syndromic tracking
 - % Influenza-like illness
 - % Gastrointestinal
- Increased access to syndromic data
 - Hospitals
 - Local health departments

Thank you

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Questions or Comments

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